Energy Efficiency Committee Hearing

Summary of Proposed Changes For

California 2008 Building Energy Efficiency Standards
45-Day Language Express Terms

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Background

Policy Goals

- Energy Action Plan / IEPR
  - Efficiency at the top of the Loading Order
  - Demand Response
  - Encourage PVs in the Standards
  - Combined Energy and Water Efficiency
- West Coast Governors' Global Warming Initiative
  - 15% efficiency savings through State Building Codes by 2015
- Green Building Initiative (Exec Order S-20-04)
  - 20% increase in Nonresidential Standards by 2015
- Climate Action Initiative (Exec Order S-3-05), AB32
  - Reduce Greenhouse Gas Emissions to 2000 level by 2010
  - Reduce Greenhouse Gas Emissions to 1990 level by 2020
  - Standards must help to meet Greenhouse Gas Emissions Reduction Goals

Major Collaborators for Building Standards

- PIER Focused Research
  - Views Standards as a primary delivery mechanism
  - Substantial Research for 08 Standards
- PGC-funded Codes and Standards
  - CASE Initiatives by PG&E, Edison, Sempra
- Public process with active stakeholder input

The 2008 Standards Update Process

- 2008 Standards workshops got underway in October of 2005
- Staff has held public workshops in October 2005, February 2006, March 2006, May 2006, July 2006, February 2007, and July 2007, most were two-day events

Proposed Changes for Both Residential and Nonresidential Buildings

- Updated Time Dependent Valuation (TDV) to measure savings from energy efficiency standards at times of peak

- Revisions to the Administrative sections 10-103 to allow for electronic filing and compliance documentation maintenance for future use, 10-105 to clarify roles and responsibilities of state agencies for enforcement of the standards, 10-113 to clarify requirements for low-sloped and steep-sloped roofs, and 10-114 to require local ordinance for using security multipliers for outdoor lighting

- Programmable communicating thermostats (mostly residential) for demand response control by utilities

- Revisions and clarifications to Section 118, Mandatory Requirements for Insulation and Roofing Products, including introduction of Solar Reflectance Index (SRI) for cool roof compliance

- Revisions and clarifications to Section 119, Mandatory Requirements for Lighting Control Devices

- Add prescriptive Cool Roof requirements for steep-sloped roofs

- Changes to Joint Appendix 4 for wall, roof, and floor assemblies

Proposed Changes for Both Residential and Nonresidential Buildings (Continued)

- Reorganizing the Joint Appendices into the Reference Appendices, creating the Residential and Nonresidential Appendices, migrating relevant sections from the ACM Manuals into the Reference Appendices

- Refinements to additions and alterations requirements for residential and nonresidential buildings

Proposed Changes for Nonresidential Buildings

- Revisions and clarification to Sections 130-134, Mandatory Requirements for Lighting Systems and Equipment

- Added more Complete Building Method Type of Use categories and Area Category Function Areas for indoor lighting, and revise Lighting Power Densities (LPDs) for selected occupancies, disallow Retail and Wholesale from using the Complete Building Method

- Updated indoor lighting requirements for Tailored Method, including wall and floor display lighting, and revised LPDs based on metal halide

- Added requirements for occupant sensors in new indoor areas

- Clarified the alteration requirements for indoor lighting

- Revised the compliance credit for high efficacy dimmable ballasts controlled by a load shedding device to reduce energy use when signaled

- Require large retail spaces to have demand responsive lighting controls installed

- Revised the outdoor lighting compliance procedure and update outdoor lighting power densities,

- Updated sign mandatory and prescriptive requirements

Proposed Changes for Nonresidential Buildings (Continued)

- Updated lighting control schedules based on new TDV multipliers
- Added acceptance requirements for outdoor lighting and update existing acceptance requirements for indoor lighting
- Updates for compliance to require side-lighting and day-lighting controls for areas near windows for some types of buildings, change definition of daylit area
- Updated mandatory skylight requirements to include smaller buildings
- Changes to site-built fenestration requirements including NFRC new Component Method Approach certification and CEC default values in Section 116 and NA6
- New fenestration acceptance verification requirements for nonresidential building envelope. NFRC Certified and unlabeled fenestration will now be required to be verified before installation
- Revised Cool Roof requirements for low-slope roofs

Proposed Changes for Nonresidential Buildings (Continued)

- Revised roof, wall, and floor insulation requirements, establish field verification and protocols for spray foams and acceptance requirements

- Revised overall building envelope method to combine heating and cooling and to provide simplified trade-offs for roofing alterations

- Refined acceptance testing requirements to ensure HVAC works properly, allow compliance credit for automatic fault detection diagnostic systems

- New controls requirements for single-zone variable air volume (VAV) systems to be Effective January 1, 2012

- New envelope, lighting, and mechanical requirements for refrigerated warehouses

- New requirements - When direct digital control is to the zone level, the following controls are required: demand shedding controls, hydronic pressure reset, VAV zone minimums, demand control ventilation, and supply air temperature reset

Proposed Changes for Nonresidential Buildings (Continued)

- Expanded Demand Control Ventilation requirements to multizone systems
- New Global temperature adjustment requirement (demand response)
- New Requirement for Hotel/Motel occupancies to use residential water heating models
- Prescriptive requirement for gas water heating in nonresidential buildings

Proposed Changes for Residential Buildings

- Added New Solar Home Partnership (NSHP) photovoltaic (PV) installation as Compliance Option for energy efficiency compliance credit over and above Title 24

- Improved roof and attic modeling - Unconditioned Zone Model (UZM) - to better model thermal interactions in attic such as radiant barriers, cool roofs, and ducts

- Upgraded window requirements (solar heat gain coefficient and U factor)

- Clarified lighting requirements, including controls and kitchen lighting, provided tradeoff option for additional low-efficacy lighting in the kitchen

- New requirements for mechanical ventilation to maintain indoor air quality in-line with ASHRAE Standards 62.2 requirements

- Update swimming pool and spa requirements to include two-speed pumps and time clocks, limit flow velocity

- New efficiency measure of furnace fan energy use

Proposed Changes for Residential Buildings (Continued)

- Updated requirements for air conditioning refrigerant charge verification procedures, proper airflow, and thermal expansion valve treatment; added simplified HERS verification procedure for refrigerant charge and airflow measurements, alternative methods for refrigerant charge verification

- Revised ACM Manual calculations for: a) slab heat-flow and b) water heating

- New or revised compliance credit for: a) furnace fan modeling, b) HVAC sizing, c) duct leakage, and d) water heating distribution systems

- Improved cross-flow prevention and pump protection for central hot water distribution systems in multifamily buildings with demand-control circulation loops

- Under-slab hot water pipe insulation to mitigate heat loss

Compliance Options Proposed for 2008 Standards

Residential Compliance Options

- Distributed Energy Storage
- Evaporatively Cooled Condensers
- Evaporative Coolers

Nonresidential Compliance Options

- Under Floor Air Distribution Systems
- Fault Detection And Diagnostics For Air Handler Units, VAV, and Rooftop Units
- Thermal Energy Storage